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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of	)	Examiner: Lugo, Carlos
	)	
TORRES ET AL.	)	
	)	Group Art Unit: 3677
Serial No.: 09/919,326	)	
	)	
Filed: July 31, 2001	)	
	)	Docket No.: DP-303536
For: HIGH PRESSURE SEAL	)	

**APPELLANT'S BRIEF**

Mail Stop Appeal Brief - Patents  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, Virginia 22313-1450

Dear Sir:

Appellant's brief is hereby filed in triplicate in accordance with 37 CFR § 1.192.

The Commissioner is hereby authorized to charge the Appeal Brief fee in the amount of \$500.00 and any additional fees or overpayments to Deposit Account No. 50-0831. A duplicate copy of this sheet is enclosed.

(1) Real Party in Interest:

The real party in interest is Delphi Technologies, Inc. to which the patent application has been assigned.

(2) Related Appeals and Interferences:

There are not any related appeals or interferences.

(3) Status of Claims:

Claims 5, 7-11 and 13-16 are pending in the application.

Claims 5, 7, 8 and 13-15 are finally rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 3,792,416 to Moulin.

Claims 5, 7-11 and 13-16 are finally rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,540,450 to Hayashi et al.

(4) Status of Amendments:

There are not any amendments that have been filed since the final rejection.

(5) Summary of the Invention:

It is conventional to provide a seal for an electrical connector, comprising a sleeve having a radial flange that has an outer diameter that is substantially greater than the diameter of the cavity to be sealed. Such conventional seals are shown in figure 1A of the patent application and in figure 5 of the U.S. Patent 3,792,416 issued to Norbert L. Moulin February 12, 1974.

As the seal is forced into the cavity, the flange is bent in the direction opposite to the direction of insertion. Bending of the flange forms it into a cup like shape creating a seal where the cup rim contacts the interior surface of the cavity as shown in figure 1B of the patent application and in figure 8 of the Moulin '416 patent.

Because the outside circumference of the unbent flange is substantially greater than the circumference of the cavity, a wrinkling of the flange can occur when the seal is inserted into the cavity as shown in figure 1C of the patent application.

As shown in figure 2 of the patent application, the present invention provides a sealing assembly 40 comprising a sleeve 44 having an interior surface 44 and an exterior surface 46. An integrally formed skirt 48 that extends around the sleeve includes a sealing surface 50 and an interior surface 52. The sealing surface 50 has substantially the same shape as the interior surface 82 of the cavity 68. In the illustrated embodiment, the shape of both the interior surface 82 and the skirt sealing surface 50 are generally cylindrical.

When the sealing assembly 40 is inserted into the cavity 68 as shown in figures 3A and 3B of the patent application, the generally cylindrical skirt sealing surface 50 contacts the cavity interior surface 82 to create a liquid and gas tight seal therebetween. Because the sealing surface 50 is preformed so that its sealing surface 50 has substantially the same shape as the interior cavity surface 82, the skirt must only deform a small amount between the sealing surface 50 and the cavity surface 82. The amount of skirt deformation is small enough so that the sealing surface 50 does not wrinkle in the manner illustrated in figure 1C of the patent application. Therefore no leak paths exist between the sealing surface 50 and the cavity interior surface 82.

(6) Issues:

Are Claims 5, 7, 8 and 13-15 anticipated by U.S. Patent No. 3,792,416 to Moulin, under 35 U.S.C. § 102(b)?

Are Claims 5, 7-11 and 13-16 anticipated by U.S. Patent No. 5,540,450 to Hayashi et al. under 35 U.S.C. § 102(b)?

(7) Grouping of Claims:

Claims 5, 7, 8 and 13-15 stand or fall together with respect to the final rejection, based on the Moulin '416 patent.

Claims 5, 7, 8 and 13-15 stand or fall together with respect to the final rejection based on the Hayashi et al. '450 patent.

However, claims 9-11 and 16 do not stand or fall with claims 5, 7, 8 and 13-15 based on the Hayashi et al. '450 patent because these are method claims.

(8) Argument:

Claims 5, 7, 8 and 13-15 are not anticipated by U.S. Patent No. 3,792,416 to Moulin under 35 U.S.C. § 102(b).

The Moulin '416 patent, which is in the electrical connector art, represents the precise problem of the prior art that the invention overcomes, namely, the possible wrinkling of the seal flange as explained in paragraphs in paragraphs [0002], [0003], [0004], [0005], [0006] and [0007] of the patent application.

In rejecting the claims, the Examiner states that the method of forming the device is not germane to the issue and consequently "molded" as a descriptor of the skirt has not been given any patentable weight. However, it is the shape of the molded skirt, not the forming process that distinguishes base claims 5, 8 and 13 over the Moulin '416 reference. More precisely, base claims 5, 8 and 13 recite that the "sealing surface has substantially the same shape as the interior surface of the cavity prior to insertion into the cavity".

The Examiner recognizes that the Moulin '416 patent does not disclose that the "sealing surface has substantially the same shape as the interior surface of the cavity prior to insertion into the cavity". See page 4, 5<sup>th</sup> paragraph of the Office Action mailed June 3, 2004.

However, the Examiner now holds that "the limitation that the sealing surface has substantially the same shape of interior surface of the cavity prior to insertion into

the cavity so that the skirt deforms only a small amount to form a seal between the sealing surface and the interior surface of the cavity when the sleeve is subsequently into the cavity” has not been given any patentable weight because the limitation is considered as a method step in an article claim. See the first paragraph on page 4 of the Office Action mailed August 27, 2004.

The claim limitation that the Examiner has ignored does not describe a method step. The claim limitation on the shape of the sealing surface 50 is a structural limitation that describes a physical characteristic of the sealing surface, i.e. the shape of the sealing surface which is not dependent on any particular method of achieving the shape. Describing the shape of the sealing surface in relation to the shape of the interior surface of the cavity does not alter the fact that the shape of the sealing surface is a structural limitation. Describing the shape of the sealing surface under a particular circumstance (i.e. before insertion into the cavity) does not alter the fact that the shape of the terminal is a structural limitation.

The concluding functional phrase, “so that the skirt deforms only a small amount to form a seal between the sealing surface and the interior surface of the cavity when the sleeve is subsequently inserted into the cavity” still does not alter the fact that the shape of the sealing surface is a structural limitation. Moreover, there is nothing inherently wrong with the use of functional language in drafting claims. *In re Swinehart*, 439 F.2d 210, 169 USPQ 226 (CCPA 1971).

It is axiomatic that a reference must disclose each and every element of the claim in order to anticipate the claim under 35 U.S.C. § 102. Since the Moulin ‘416 patent does not disclose a sealing surface that has substantially the same shape as the interior surface of the cavity prior to insertion into the cavity, base claims 5, 8 and 13 are not anticipated under 35 U.S.C. § 102.

This also applies to dependent claims 7, 14 and 15.

Claims 5, 7, 8 and 13-15 are not anticipated by U.S. Patent No. 5,540,450 to Hayashi et al under 35 U.S.C § 102(b).

The Hayashi ‘450 patent discloses a rubber plug 3 for a water proof connector that is disposed between an electric wire 2 and a seal cylinder 1. An annular groove 14 divides the rear portion of the rubber plug 3 into an inner cylinder 11 and an outer cylinder 16. The inner cylinder 11 has an inner lip 12 seals against the electric wire 2.

The outside diameter R2 of the rear end of the outer cylinder 16 is much larger than the inside diameter R1 of the seal cylinder 1. Hence when the rubber plug is inserted into the seal cylinder 1 as much as required, the outer cylinder 16 is pressed against the edge 1a of the opening of the seal cylinder 1. See column 4, lines 14-16 and figures 1 and 2 of the Hayashi '450 patent. Thus the Hayashi '450 patent is more or less the same as the Moulin '416 patent that represents the precise problem of the prior art that the invention overcomes, namely, the possible wrinkling of the seal flange as explained in paragraphs [0002], [0003], [0004], [0005], [0006] and [0007] of the patent application.

The Hayashi '450 patent, like the Moulin '416 patent discussed above, does not disclose an arrangement where the "sealing surface has substantially the same shape as the interior surface of the cavity prior to insertion into the cavity".

As before, the Examiner holds that this limitation has not been given any patentable weight because the limitation is a method step in an article claim.

The limitation that the Examiner has ignored is not a method step. It is a structural limitation that describes a physical characteristic of the sealing surface, i.e. the shape of the sealing surface that is not dependent on any particular method of achieving the shape. Furthermore the fact that the claimed shape is a structural limitation is not altered by the shape of the sealing surface being described in relation to the shape of the interior surface of the cavity or being described prior to insertion into the cavity. Lastly, as above, the concluding functional explanation does not alter the fact that the claimed shape is a structural limitation either.

Consequently, base claims 5, 8 and 13 are not anticipated by the Hayashi '450 patent either.

This also applies to dependent claims 7, 14 and 15.

Claims 9-11 and 16 do not stand or fall with the rejection of claims 5, 7, 8 and 13-15 based on the Hayashi '450 patent because claims 9-11 and 16 are method claims where the so-called method limitation cannot be ignored.

Claims 9-11 and 16 are not anticipated by U.S. Patent No. 5,540,450 to Hayashi et al under 35 U.S.C. § 102(b).

Method claims 9-11 and 16 have been rejected on the basis that the Hayashi '450 patent discloses a method having the step of "inserting a section of the structure

including portion of the structure inserted through the sealing assembly into the cavity through the cavity opening so that the molded skirt is in sealing contact with the inside surface of the cavity wherein the molded skirt comprises a sealing surface that has substantially the same shape as the interior surface of the cavity prior to insertion into the cavity so that the skirt deforms only a small amount to form a seal between the sealing surface and the interior surface of the cavity” as required by claim 9. Emphasis added. In the rejection of method claims, the Examiner holds that the term “substantially” is a broad term and consequently the Hayashi ‘450 patent discloses a sealing surface 16 that has “substantially” the same shape as the interior surface of the cavity 1. See the paragraph beginning at the penultimate line on page 5 of the Office Action of December 27, 2004.

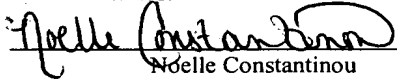
However as pointed out above, the sealing surface of the Hayashi ‘450 patent does not have substantially the same shape as the interior of the cavity prior to insertion into the cavity. As clearly stated in the Hayashi ‘450 patent and as clearly shown in figure 1 of the Hayashi ‘450 patent, the outside diameter R2 of the rear end of the Hayashi outer cylinder 16 is much larger than the inside diameter R1 of the seal cylinder 1. See column 4, lines 14-16 and figure 1 of the Hayashi ‘450 patent.

Consequently base method claims 9 and 16 are not anticipated by the Hayashi ‘450 patent under 35 U.S.C. § 102. This also applies to dependent claims 10 and 11.

The Examiner’s rejection of claims 5, 7-11 and 13-16 should be reversed for the reasons stated above.

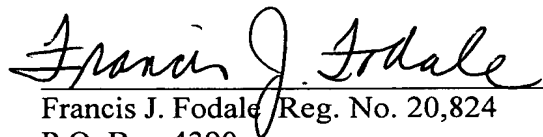
CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail with sufficient postage in an envelope addressed to the Commissioner for Patents, P.O. Box 1450 Alexandria, Virginia 22313, on May 12, 2005.

  
Noelle Constantinou

Respectfully submitted,

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(9) Appendix

Claims 1-4 (cancelled)

5. A device for sealing a cavity comprising an interior surface, the device comprising:

a sleeve comprising a longitudinal axis and an insertion end;

a molded skirt integrally formed on the sleeve;

wherein the skirt comprises a first integral section extending in a plane which is substantially perpendicular to the longitudinal axis; and

wherein the skirt comprises a second integral section comprising an interior surface and a sealing surface that extends along the length of the sleeve in a direction opposite to the insertion end such that there is a gap between the interior surface and the sleeve;

wherein the sealing surface has substantially the same shape as the interior surface of the cavity prior to insertion into the cavity so that the skirt deforms only a small amount to form a seal between the sealing surface and the interior surface of the cavity when the sleeve is subsequently inserted into the cavity; and

wherein the molded skirt is constructed from an electrically insulating material.

6. (cancelled)

7. The device of claim 5, further comprising:

a wiping land located between the molded skirt and the sleeve insertion end.

8. A device for sealing a cavity comprising an interior surface, the device comprising:

a sleeve comprising a longitudinal axis and an insertion end;

a molded skirt integrally formed on the sleeve;

wherein the skirt comprises a first integral section extending in a plane which is substantially perpendicular to the longitudinal axis; and

wherein the skirt comprises a second integral section comprising an interior surface and a sealing surface that extends along the length of the sleeve in a direction opposite to the insertion end such that there is a gap between the interior surface and the sleeve;

wherein the sealing surface has substantially the same shape as the interior surface of the cavity prior to insertion into the cavity so that the skirt deforms only a small amount to form a seal between the sealing surface and the interior surface of the cavity when the sleeve is subsequently inserted into the cavity; and

wherein the molded skirt is constructed from an electrically insulating, elastomeric material.

9. A method of sealing an opening of a cavity comprising the steps of:

inserting a portion of a structure through a sleeve of a sealing assembly, the sealing assembly having a molded skirt constructed from an electrically insulating, elastomeric material;

inserting a section of the structure including portion of the structure inserted through the sealing assembly into the cavity through the cavity opening so that the molded skirt is in sealing contact with the inside surface of the cavity wherein the molded skirt comprises a sealing surface that has substantially the same shape as the interior surface of the cavity prior to insertion into the cavity so that the skirt deforms only a small amount to form a seal between the sealing surface and the interior surface of the cavity.

10. The method of sealing an opening of a cavity of claim 9, wherein said sealing assembly also comprises a wiping land.

11. The method of sealing an opening of a cavity of claim 10, further comprising the step of:

cleaning a portion of interior surface of said cavity using said wiping land.

12. (cancelled)



13. A high pressure seal for an electrical connector for sealing a connector cavity having an interior surface, the high pressure seal comprising:

a sleeve having longitudinal axis and an insertion end;

a skirt integrally formed on the sleeve;

the sleeve and the skirt being constructed from an electrically insulating, elastomeric material,

the skirt having a first integral section extending in a plane which is substantially perpendicular to the longitudinal axis of the sleeve;

the skirt having a second integral section comprising an interior surface and a sealing surface that extends along the length of the sleeve in a direction opposite to the insertion end such that there is a gap between the interior surface and the sleeve; and

the sealing surface having substantially the same shape as the interior surface of the connector cavity prior to insertion into the connector cavity so that the skirt deforms only a small amount to form a seal between the sealing surface and the interior surface of the cavity when the sleeve is subsequently inserted into the connector cavity such that the sealing surface is not substantially wrinkled when the sealing surface is in sealing contact with the interior surface of the connector cavity.

14. The high pressure seal as defined in claim 13 wherein the second integral section of the skirt has a length that is less than the length of the sleeve.

15. The high pressure seal as defined in claim 14 wherein the sleeve has a wiping land located between the second integral section of the skirt and the sleeve insertion end.

16. A method of sealing an opening of an electrical connector cavity having an interior surface comprising the steps of:

inserting an electrical connector through a sleeve of a sealing assembly so that the sealing assembly is attached to the electrical connector, the sleeve of the sealing assembly having a molded skirt, the sleeve and the molded skirt being constructed of an electrically insulating, elastomeric material;

inserting the electrical connector and the attached sealing assembly into the connector cavity through the opening of the connector cavity so that the molded skirt is in sealing contact with the inside surface of the connector cavity, the molded skirt comprises a sealing surface that has substantially the same shape as the interior surface of the connector cavity prior to insertion into the cavity so that the skirt deforms only a small amount to form a seal between the sealing surface and the interior surface of the connector cavity;

the sealing surface having substantially the same shape as the interior surface of the connector cavity so that the skirt deforms only a small amount to form a seal between the sealing surface and the interior surface of the connector cavity when the sleeve is inserted into the connector cavity such that the sealing surface is not substantially wrinkled when the sealing surface is in sealing contact with the interior surface of the connector cavity.